INTRODUCTION

- We define mobility as one's ability to reach a destination using their preferred transportation mode choice, both affordably and reliably.
- To measure mobility, we designed three indices: **Mode Choice**, **Affordability**, and **Reliability**.
- These indices can be used to find trends in Seattle's travel patterns, predict mode share, and identify areas where needs are not being met.

RAW MOBILITY DATA

Google Distance Matrix API
168,000 trips/day per mode

CALIBRATION AND TRAINING DATA

Puget Sound Regional Council (PSRC) Household Travel Survey
3,000 households; 50,000 trips

MODE CHOICE

The availability of modes in to reach the destinations in the market basket

Travel Time Threshold
- 30 minutes
- 60 minutes
- 45 minutes
- 45 minutes

AFFORDABILITY

The relative cost to reach destinations in the market basket

$0.56 / mile
$2.75 / trip
$0.15 / mile
$0 / mile
$14.10 / hr

RELIABILITY

The consistency in travel duration over time

TRAVEL PERSONA ADJUSTMENTS

Travelers may live in the same Block Group but have very different lifestyles. K-Means clustering helped develop personas that describe the needs, experiences, and travel patterns of distinct groups of people. The Mobility Indices can be tuned to reflect these personas.

USE CASES

Travel mode-share predictive model

PSRC Travel Survey 80% Accuracy

Mode choice & affordability 77% Accuracy

Modeled drive-alone rates using only mobility indices as machine learning features scored comparatively to a similar approach that incorporates dozens of travel and household attributes from the PSRC Survey.